

CHAPTER 2

DESCRIPTION OF THE TENNESSEE WESTERN VALLEY (KENTUCKY LAKE) WATERSHED

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2.1. BACKGROUND. Kentucky Lake was created when TVA completed Kentucky Dam in 1944. The dam, located 22 miles upstream of the confluence of the Tennessee and Ohio Rivers, is 206 feet high and 8,422 feet long; it's the longest in the TVA system. The Western edge of the watershed defines the Tennessee Western Valley (to the west is the Mississippi River Valley). The watershed has been split into the upstream (Beech River) and downstream drainage areas (KY Lake).

This Chapter describes the location and characteristics of the Tennessee portion of the Tennessee Western Valley (KY Lake) Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location.

The Tennessee Western Valley (KY Lake) Watershed is located in Tennessee and Kentucky. The Tennessee portion of the watershed (80.7% of the watershed) includes parts of Benton, Carroll, Decatur, Dickson, Henderson, Henry, Houston, Humphreys, and Stewart Counties.

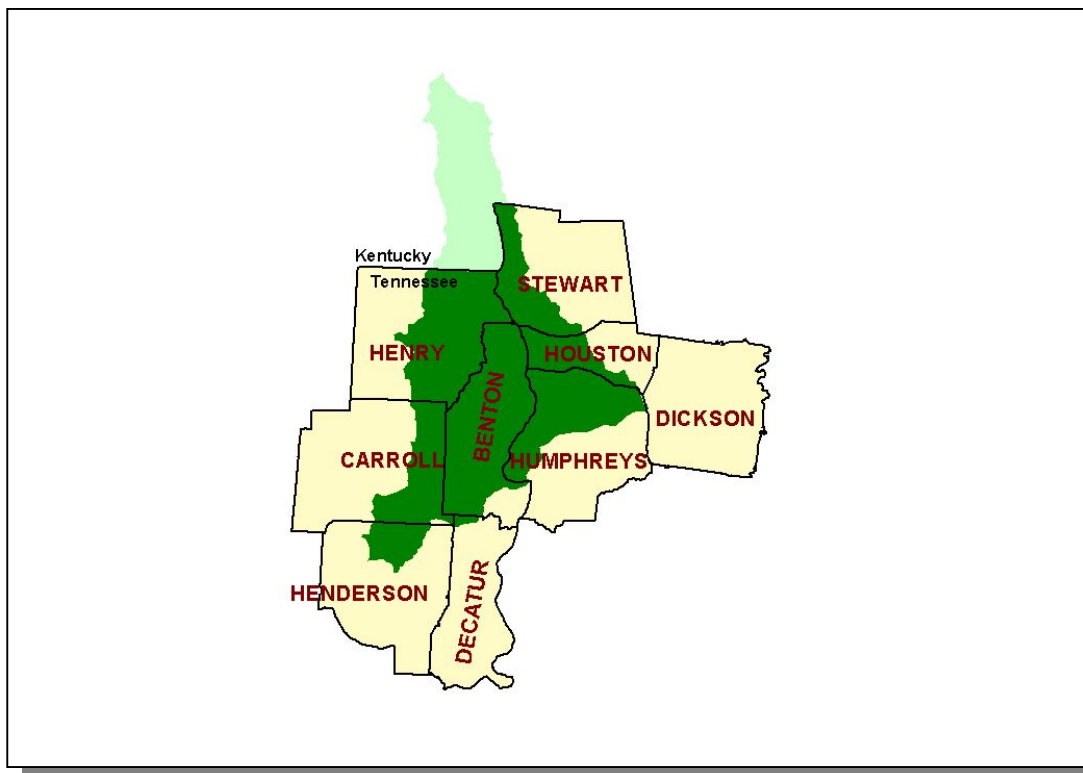


Figure 2-1. General Location of the Tennessee Portion of the Tennessee Western Valley (Kentucky Lake) Watershed. Dark green, Tennessee portion; light green, Kentucky portion.

COUNTY	% OF WATERSHED IN EACH COUNTY
Benton	26.0
Henry	22.5
Humphreys	17.0
Carroll	12.1
Stewart	10.2
Houston	6.7
Henderson	5.0
Decatur	0.5
Dickson	0.0

Table 2-1. The Tennessee Western Valley-KY Lake Watershed Includes Parts of Nine West Tennessee Counties. Twenty-five acres (0.00002% of total acres) in Dickson County are in the watershed. Percentages are calculated for Tennessee portion of watershed.

2.2.B. Population Density Centers. Five state highways and one interstate serve the major communities in the Tennessee portion of the Tennessee Western Valley (KY Lake) Watershed.

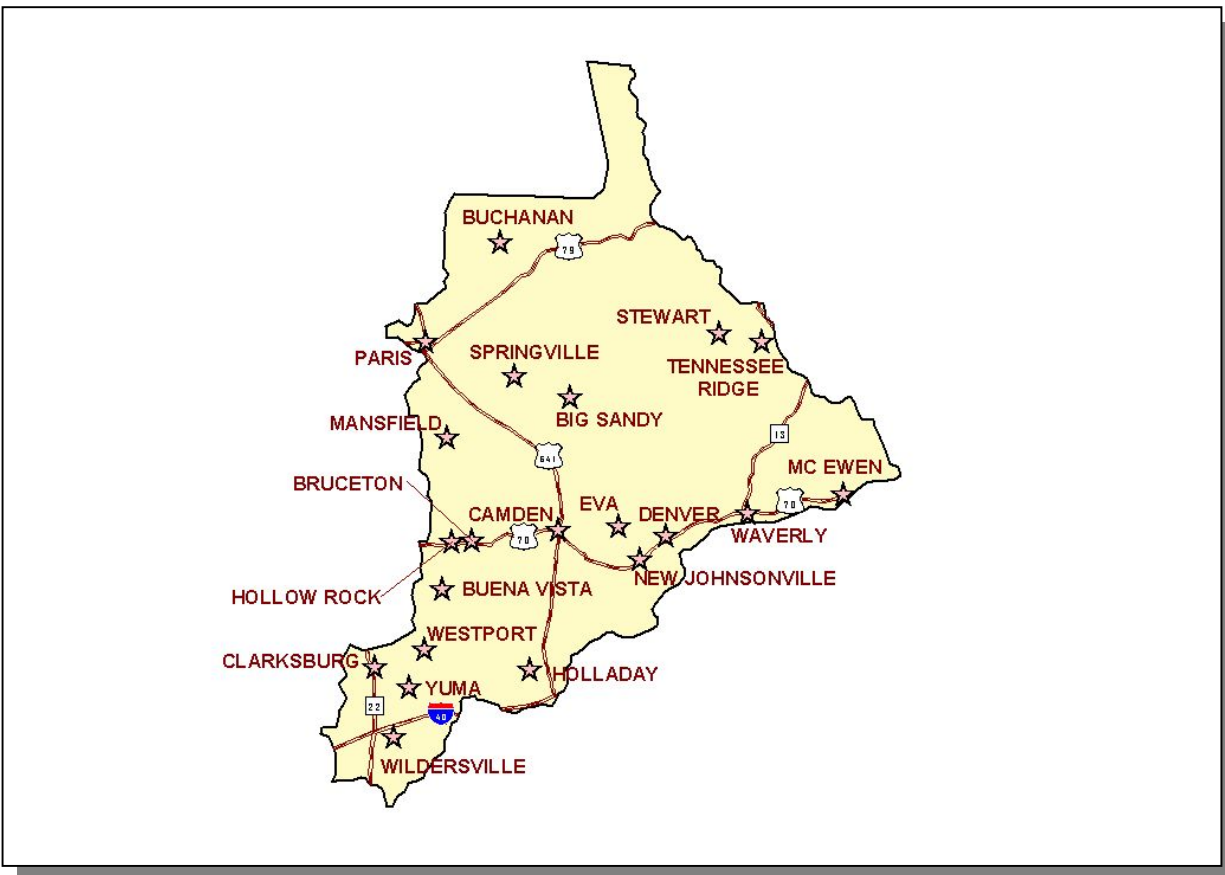


Figure 2-2. Municipalities and Roads in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed.

MUNICIPALITY	POPULATION	COUNTY
Paris*	11,635	Henry
Camden*	4,526	Benton
Waverly*	4,436	Humphreys
New Johnsonville	2,099	Humphreys
Bruceton	1,581	Carroll
McEwen	1,552	Humphreys
Tennessee Ridge	1,421	Houston
Hollow Rock	965	Carroll
Big Sandy	583	Benton
Clarksburg	436	Carroll

Table 2-2. Communities and Populations in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed. Population based on 1999 census (Tennessee 2001/2002 Blue Book). Asterisk (*) indicates county seat.

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Tennessee Western Valley (KY Lake) Watershed, designated 06040005 by the USGS, drains approximately 1,809 square miles, 1,460 square miles of which are in Tennessee, and empties to the Ohio River in Kentucky.

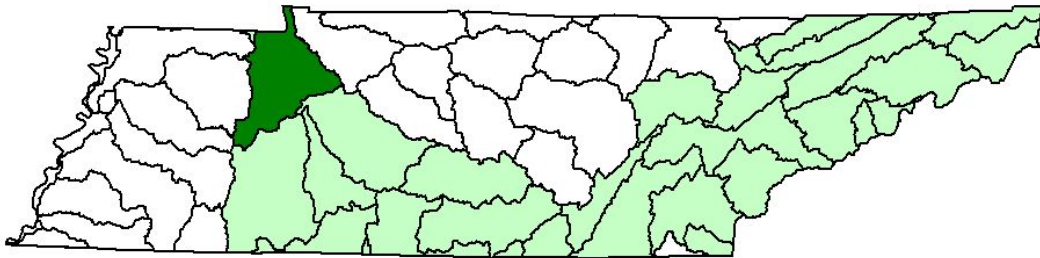


Figure 2-3. The Tennessee Western Valley (KY Lake) Watershed is Part of the Tennessee River Basin.

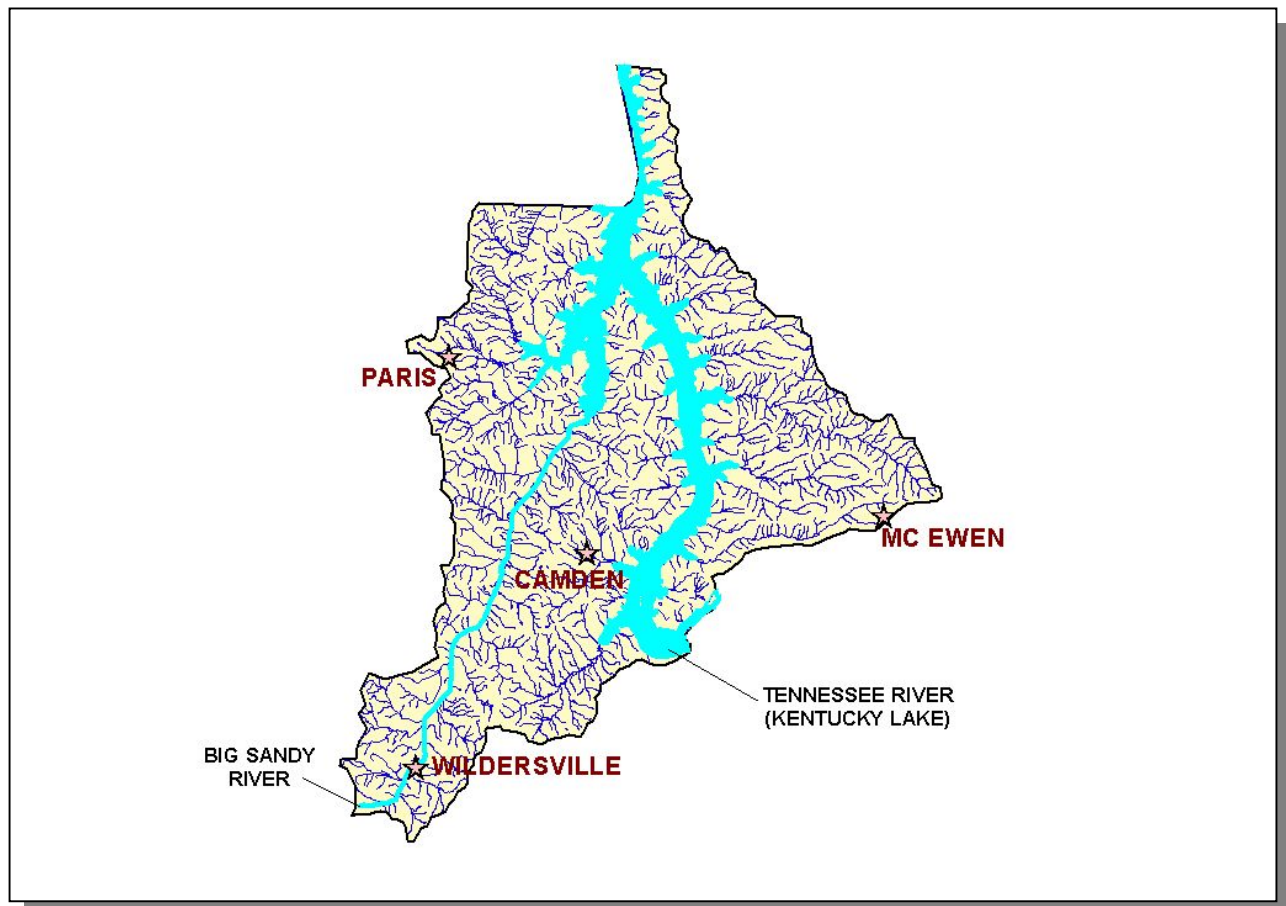


Figure 2-4. Hydrology in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed. There are 2,043 stream miles and 100,000 lake acres in the Tennessee portion of the Tennessee Western Valley (KY Lake) Watershed as catalogued in the assessment database. An additional 516 stream miles are located in the Kentucky portion of the watershed as catalogued in the River Reach File 3 database. Location of the Tennessee River (KY Lake) and Big Sandy River, and the cities of Camden, McEwen, Paris, and Wildersville are shown for reference.

2.3.B. Dams. There are 21 dams inventoried by TDEC Division of Water Supply in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

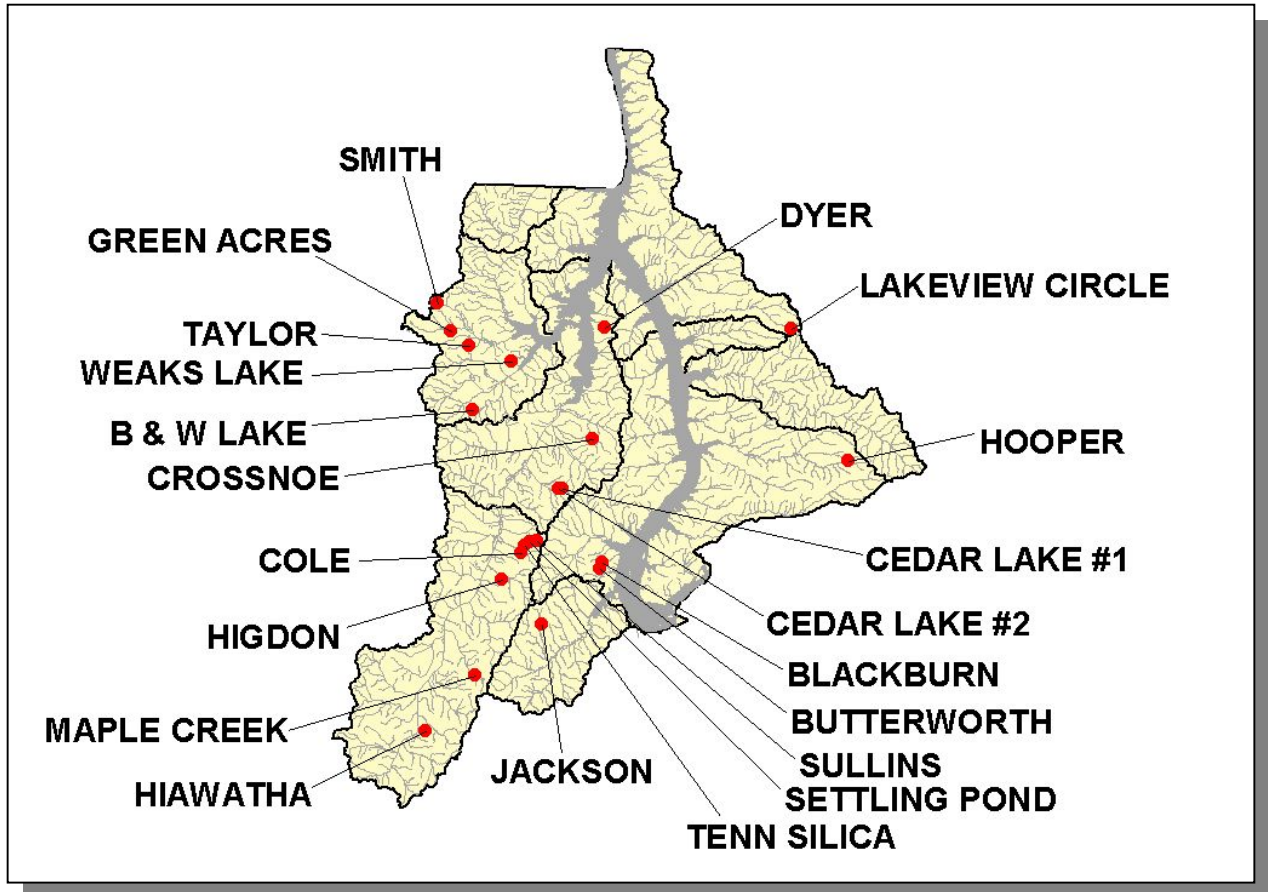


Figure 2-5. Location of Inventoried Dams in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed. More information is provided in Appendix II and on the TDEC homepage at <http://gwidc.memphis.edu/website/dws/>.

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

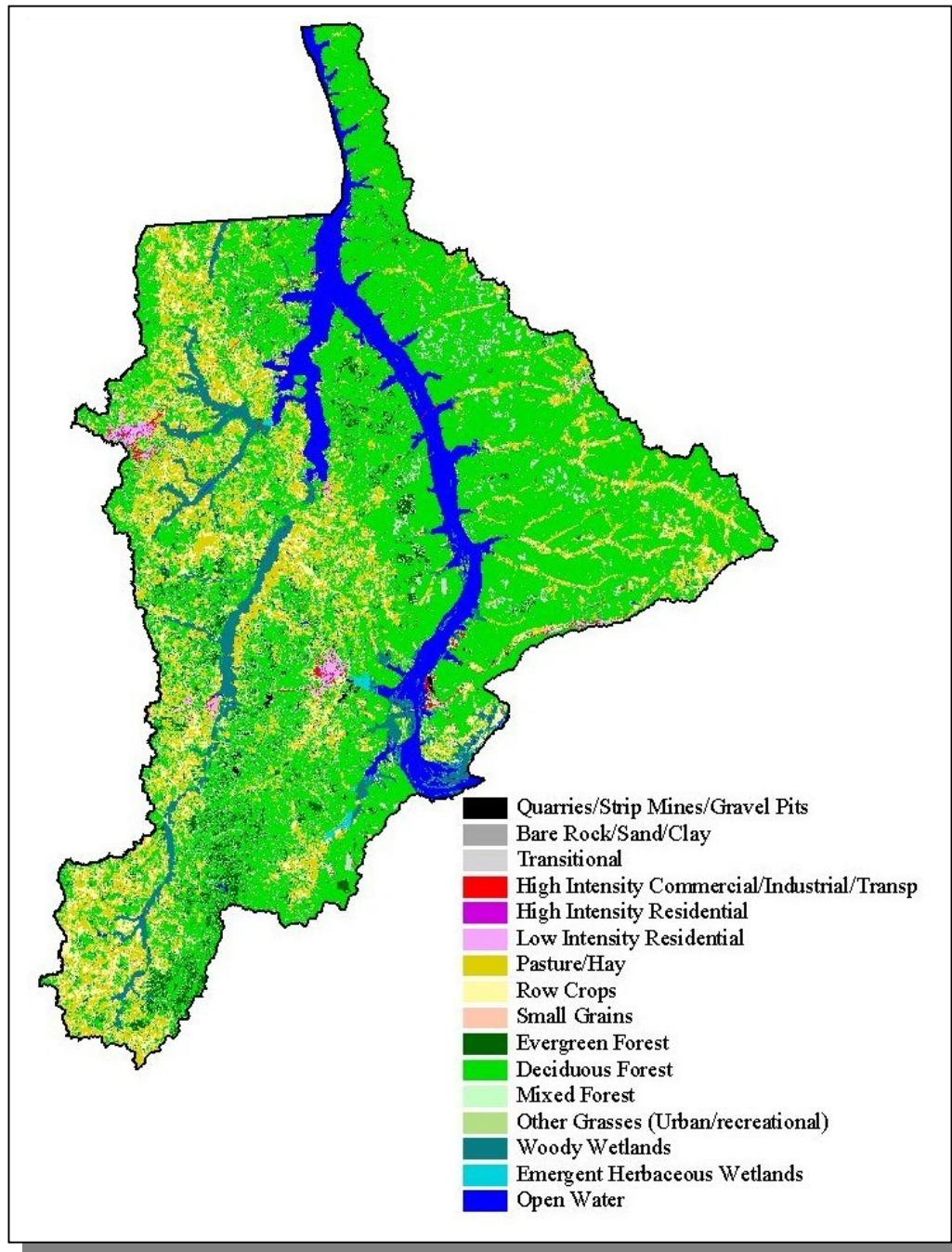


Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery in the Group 3 Portion of the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed.

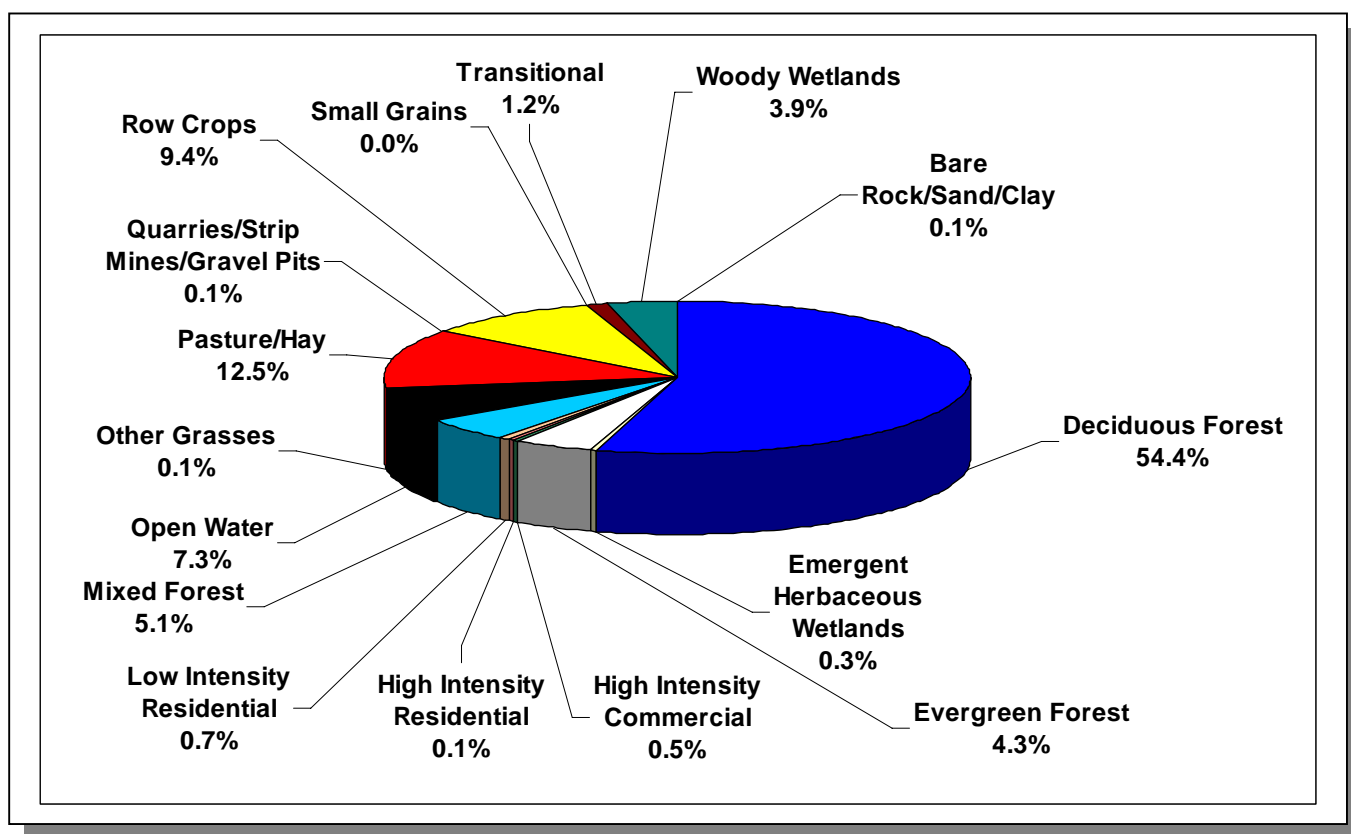


Figure 2-7. Land Use Distribution in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed. More information is provided in Appendix II.

Sinkholes, springs, disappearing streams and caves characterize karst topography. The term “karst” describes a distinctive landform that indicates dissolution of underlying soluble rocks by surface water or ground water. Although commonly associated with limestone and dolomite (carbonate rocks), other highly soluble rocks such as gypsum and rock salt can be sculpted into karst terrain. In karst areas, the ground water flows through solution-enlarged channels, bedding planes and microfractures within the rock. The characteristic landforms of karst regions are: closed depressions of various size and arrangement; disrupted surface drainage; and caves and underground drainage systems. The term “karst” is named after a famous region in the former country of Yugoslavia.

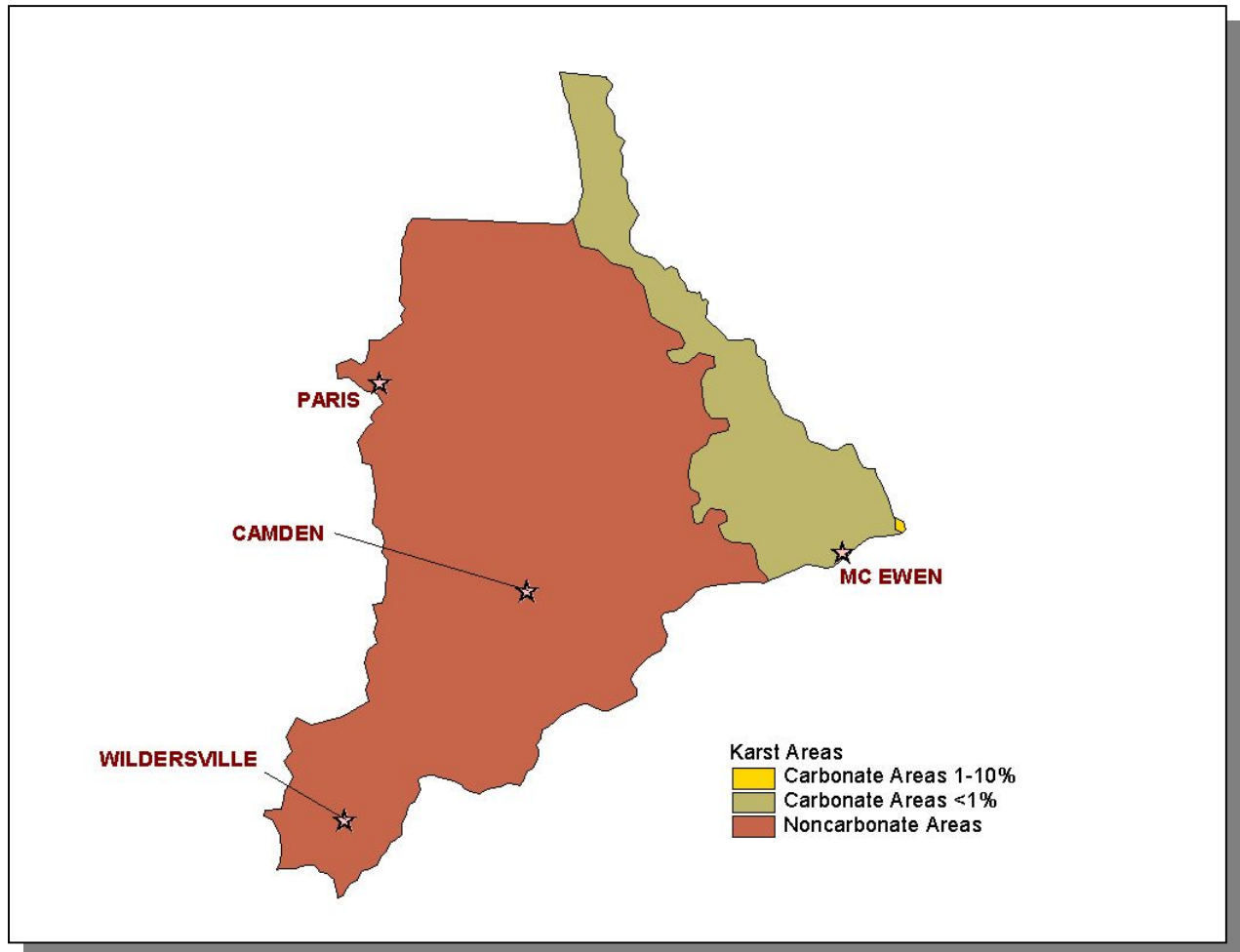


Figure 2-8. Illustration of Karst Areas in Tennessee Portion of Tennessee Western Valley (KY Lake) Watershed. Locations of Camden, McEwen, Paris, and Wildersville are shown for reference.

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Tennessee portion of the Tennessee Western Valley (KY Lake) Watershed lies within 3 Level III ecoregions (Southeastern Plains, Interior Plateau, and Mississippi Valley Loess Plains) and contains 3 Level IV subecoregions:

- **Southeastern Plains and Hills (65e)** contain north-south trending bands of sand and clay formations. Tertiary-age sand, clay, and lignite are to the west, with Cretaceous fine sand, fossiliferous micaceous sand, and silty clays to the east. Elevations reach over 650 feet with more rolling topography and relief than the Loess Plains (74b) to the west. Streams have increased gradient, sandy substrates, and distinct faunal characteristics. Natural vegetation is oak-hickory forest, grading into oak-hickory-pine to the south.
- **Western Highland Rim (71f)** is characterized by dissected, rolling terrain of open hills, with elevations of 400-1000 feet. The geologic base of Mississippian-age limestone, chert, and shale is covered by soils that tend to be cherty and acidic with low to moderate fertility. Streams are relatively clear with a moderate gradient. Substrates are coarse chert, gravel and sand with areas of bedrock. The native oak-hickory forests were removed over broad areas in the mid-to late 1800's in conjunction with the iron-ore related mining and smelting of the mineral limonite, however today the region is again heavily forested. Some agriculture occurs on the flatter interfluvies and in the stream and river valleys. The predominant land uses are hay, pasture, and cattle with some cultivation of corn and tobacco.
- **Loess Plains (74b)** are gently rolling, irregular plains, 250-500 feet in elevation, with loess up to 50 feet thick. The region is a productive agricultural area of soybeans cotton, corn, milo, and sorghum crops, along with livestock and poultry. Soil erosion can be a problem on the steeper, upland Alfisol soils. Bottom soils are mostly silty Entisols. Oak-hickory and southern floodplain forests are the natural vegetation types, although most of the forest cover has been removed for cropland. Some less-disturbed bottomland forest and cypress-gum swamp habitats still remain. Several large river systems with wide floodplains; the Obion, Forked Deer, Hatchie, Loosahatchie, and Wolf, cross the region. Streams are low-gradient and murky with silt and sand bottoms. Most of the streams have been channelized.

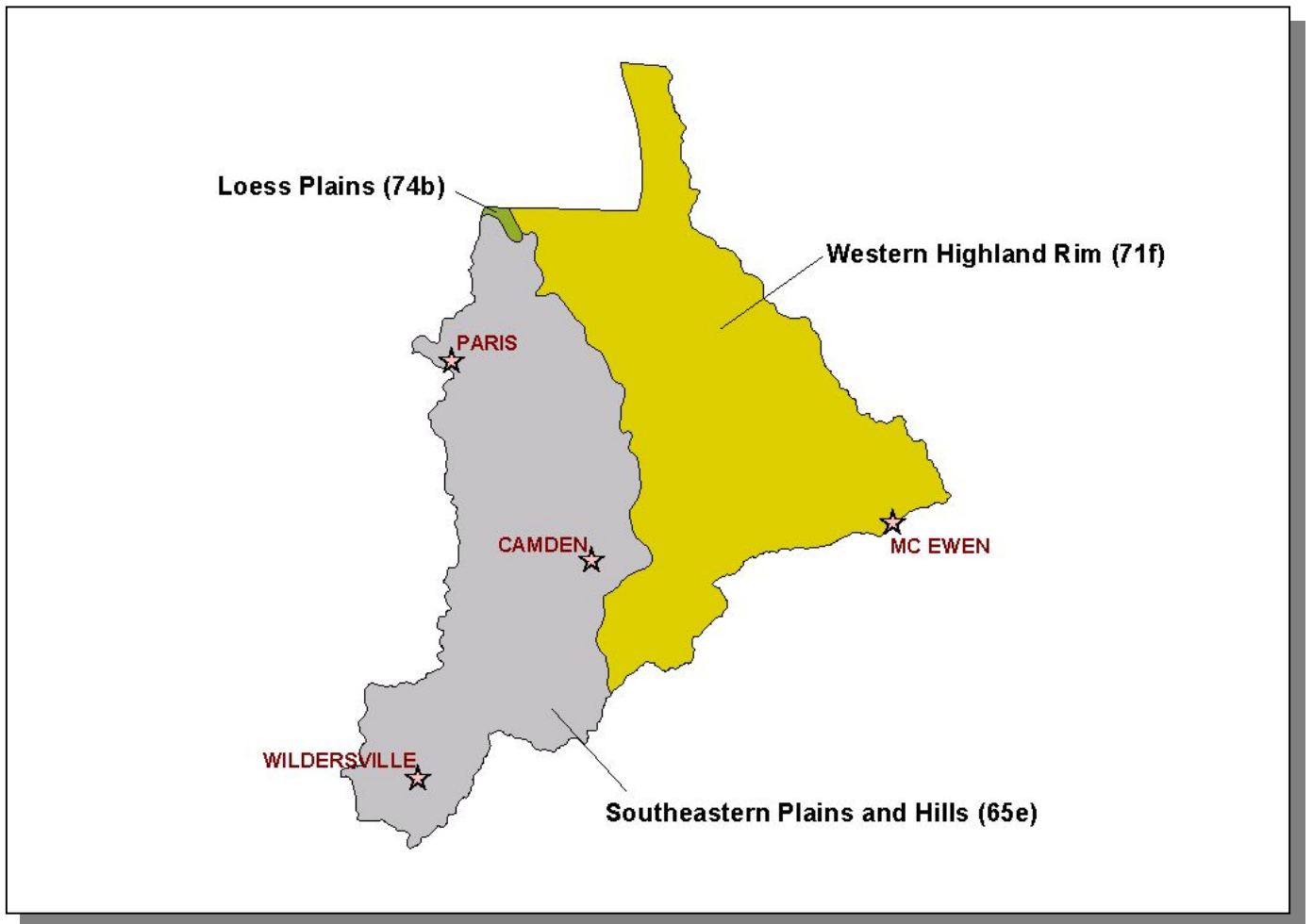


Figure 2-9. Level IV Ecoregions in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed. Locations of Camden, McEwen, Paris, and Wildersville are shown for reference.

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

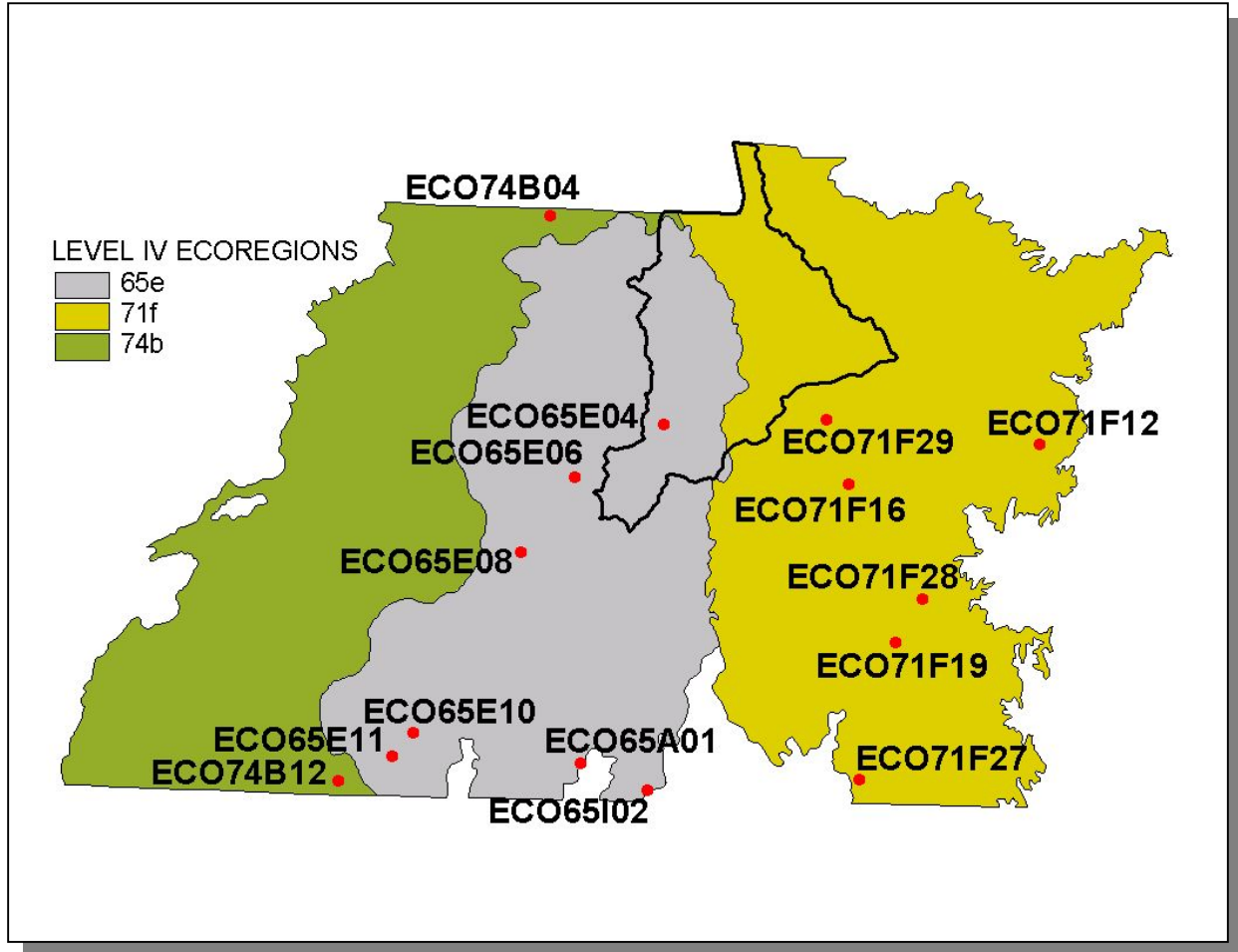


Figure 2-10. Ecoregion Monitoring Sites in Level IV Ecoregions 65e, 71f, and 74b in Tennessee. The Tennessee portion of the Tennessee Western Valley (KY Lake) Watershed boundary is shown for reference. More information is provided in Appendix II.

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Crustaceans	1
Insects and Spiders	1
Mussels	4
Amphibians	1
Birds	7
Fish	4
Mammals	3
Reptiles	4
Plants	23
Total	48

Table 2-3. There are 48 Known Rare Plant and Animal Species in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed.

In the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed, there are 4 rare fish species, 1 rare crustacean species, and 4 rare mussel species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
<i>Ichthyomyzon unicuspis</i>	Silver Lamprey		D
<i>Lepistosteus spatula</i>	Alligator Gar		D
<i>Percina burtoni</i>	Blotchside Darter	MC	D
<i>Percina phoxocephala</i>	Slenderhead Darter		D
<i>Orconectes burri</i>	A Crayfish		
<i>Lampsilis abrupta</i>	Pink Mucket	LE	E
<i>Obovaria retusa</i>	Ring Pink	LE	E
<i>Plethobasus cooperianus</i>	Orange-Footed Pimpleback	LE	E
<i>Pleurobema plenum</i>	Rough Pigtoe	LE	E

Table 2-4. Rare Aquatic Species in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed. Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service, MC, Management Concern for U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at <http://www.state.tn.us/environment/nh/data.php>.

2.6.B. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at:

<http://www.state.tn.us/environment/nh/wetlands/>

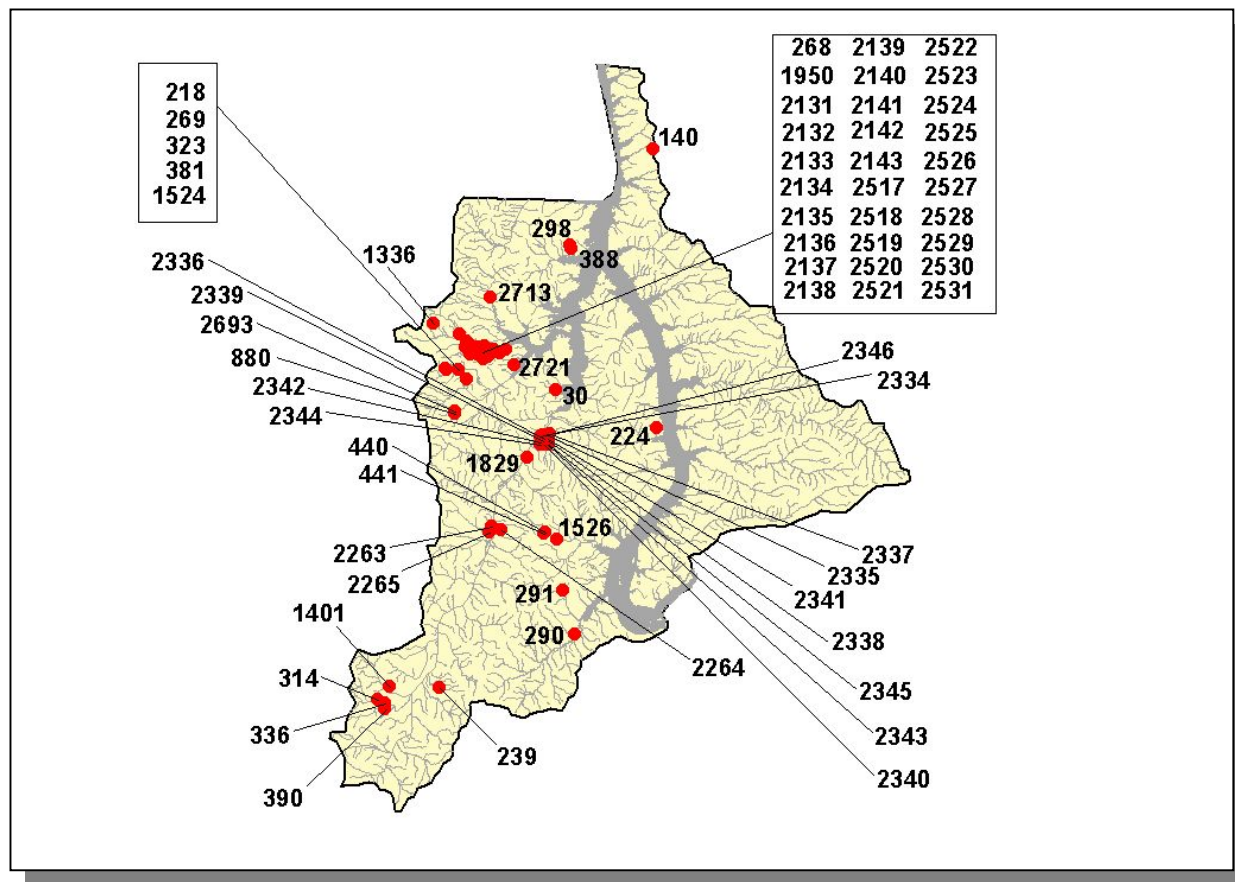


Figure 2-11. Location of Wetland Sites in TDEC Division of Natural Heritage Database in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands. More information is provided in Appendix II.

2.7. CULTURAL RESOURCES.

2.7.A. Greenways. The Tennessee Western Valley (KY Lake) Watershed has at least three greenways/trails:

- Asbury Park Walking Train in Waverly
- Big sandy walking Trail
- Paris Civic center Trail

More information about greenways and trails in the watershed may be found at:

<http://www2.state.tn.us/tdec/GREENWAYS/tnmap.htm>

2.7.B. Interpretive Areas. Some sites representative of the natural or cultural heritage are under state or federal protection:

- Land Between the Lakes National Recreation Area was established in the early 1960's. The 170,000-acre property lies between Kentucky Lake on the west and Lake Barkley on the east. The site is managed by the U.S. Forest Service.
- Nathan Bedford Forrest State Park was named in honor of the greatest military tacticians and leaders of the confederate army. The park was dedicated in 1924 on land acquired, in part, from Benton County. The site is managed by the state of Tennessee.
- Paris Landing State Park is named for a steamboat and freight landing on the Tennessee River that was active in the early 1800's. The 841-acre park is on the western shore of Kentucky Lake. The site is managed by the state of Tennessee.
- Johnsonville State Historic Area is named for Military Governor (and later President) Andrew Johnson. The 600-acre park is located on the eastern shore of Kentucky Lake. The site is managed by the state of Tennessee.
- Tennessee NWR-Duck River and Big Sandy Units, established in 1945, is managed by the U.S. Fish and Wildlife Service as an important resting and feeding area for wintering waterfowl as well as migratory birds and resident wildlife. The sites are managed by the U.S. Fish and Wildlife Service.
- Natchez Trace State Park and Forest was named for the famous Nashville to Natchez Highway, an important wilderness road of the late 18th and early 19th centuries. The sites are managed by the state of Tennessee.

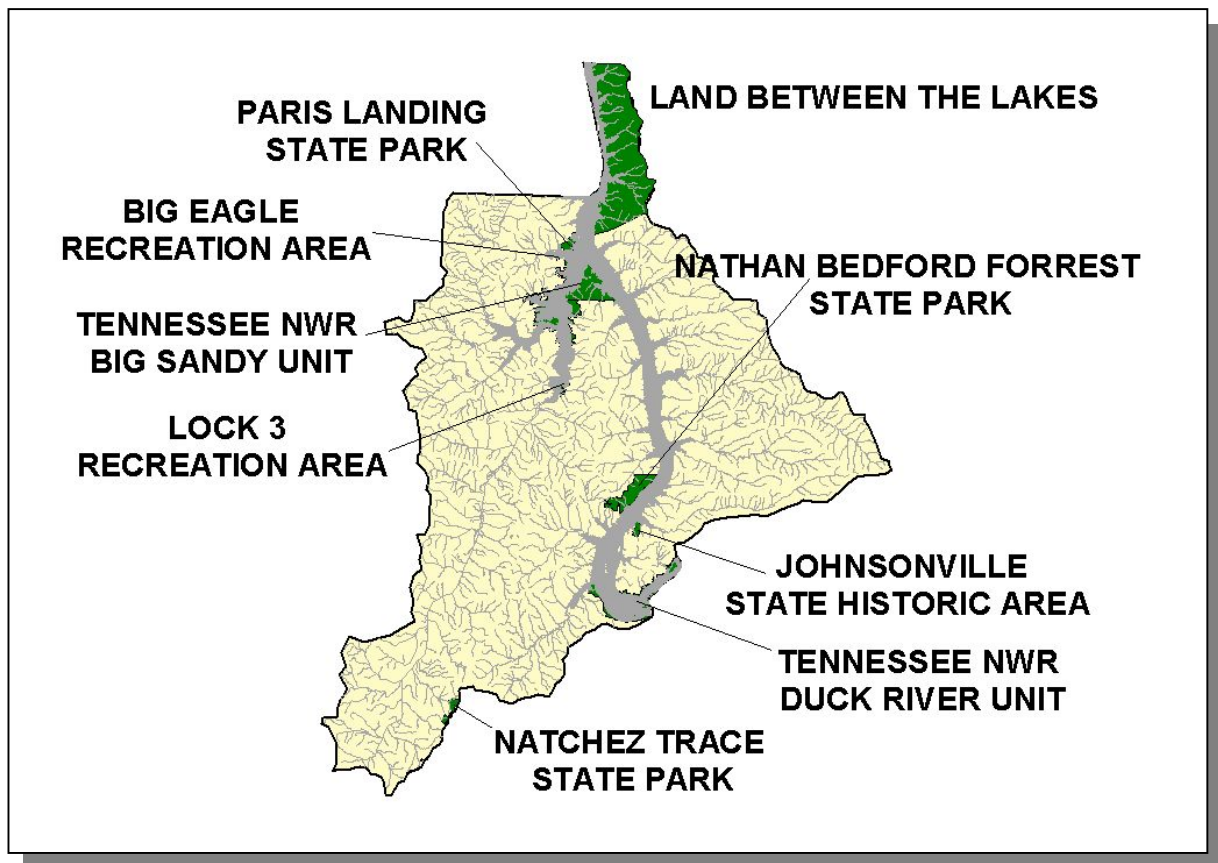


Figure 2-12. Locations of State- and Federally-Managed Lands in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed.

2.7.C. Wildlife Management Area. The Tennessee Wildlife Resources Agency manages eight wildlife management areas in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed.

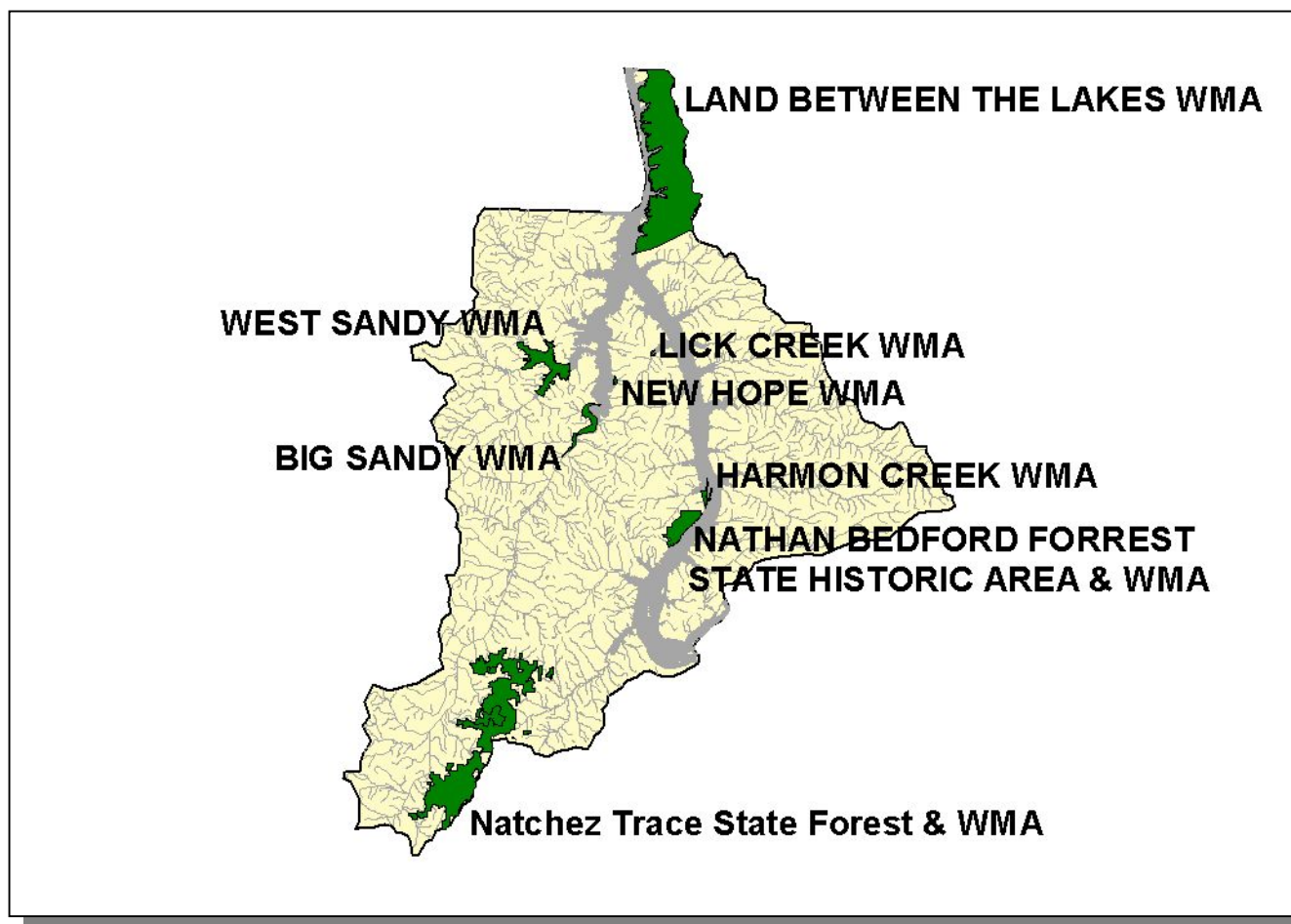


Figure 2-13. TWRA Manages Wildlife Management Areas in the Tennessee Portion of the Tennessee Western Valley (KY Lake) Watershed.

2.8. Tennessee Rivers Assessment Project. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

<http://www.state.tn.us/environment/wpc/publications/riv/>

STREAM	NSQ	RB	RF	STREAM	NSQ	RB	RF
Allen Creek Canal	4			Jones Bend Creek	3		
Bacon Creek Canal	3			Little Birdsong Creek	3		
Bailey Fork Creek	3			Little Blue Creek	3		
Bear Creek Canal	4		2	Little Eagle Creek	2	2	
Beaverdam Creek (North)	4			Little Richland Creek	3	2	
Beaverdam Creek (South)	3		2	Lost Creek	1		
Big Beaver Creek	4			Maple Creek	3		
Big Richland Creek	2,3		4	Martin Creek	4		
Big Sandy River	3	2,3		North Fork Leatherwood Creek	2		
Birdsong Creek	2		1,2	North Fork Mud Creek	3		
Blood River	1	2	2	Panther Creek	1		
Cane Creek				Ramble Creek	3		2
Clifty Creek	4			Roan Creek Canal	3		
Cotton Creek	3			Rushing Creek Drainage Ditch	3		2
Crooked Creek				Scarce Creek	2		
Cypress Creek (North)	3			Seventeen Creek	3		
Cypress Creek (South)	4		2	South Creek	3		
Dabbs Creek	3			South Fork Hurricane Creek			2
Deer Creek	2			Standing Rock Creek	2		2
Dry Creek	3		2,3	Sycamore Creek	3		
Eagle Creek	1	2		Threemile Branch Town Creek	3		
East Fork Leatherwood Creek	2		2	Trace Creek	3	3	
Fourteen Creek	3			Turkey Creek	3		
Holly Fork Creek	3		2	West Sandy Creek	2	3	
Horn Creek	3			White Oak Creek	3	3	2
Hurricane Creek	2		1				

Table 2-5. Stream Scoring from the Tennessee Rivers Assessment Project in the Tennessee Western Valley (KY Lake) Watershed.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed